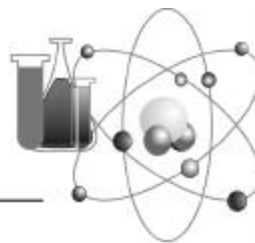


FACTS ON FILE EMSP

Environmental Management Science Program



Project Highlights

The Environmental Management Science Program (EMSP) is funding basic research projects focused on solving the most difficult problems that threaten the closure plans of DOE sites. This fact sheet highlights just one.

Phytoremediation of Ionic and Methyl Mercury Pollution

This project is exploring the manipulation of single-gene traits into plants, enabling them to remove the mercury from polluted sites and prevent methyl mercury from entering the food chain. The approach is to develop transgenic plants expressing both the bacterial organo mercury lyase (merB) and the mercuric ion reductase gene (merA). This leading-edge research is addressing phytoremediation of methyl mercury using tobacco plants and has potential applications for remediating other metal pollutants.

Locations: University of Georgia

Year of Award: 1996

Amount of Award: \$825,485

Office of Environmental Management (EM)

Problem Area: Remedial Action

Office of Science (SC) Scientific Category/Sub-

Category: Plant Science/Plant Genetics

Research Value/Impact: Using genetic engineering, researchers have transferred the “mercury-eating” trait from the soil bacteria’s DNA into plants. After plant cells are given the DNA, they are left to mature in mercury-contaminated solutions. Bacteria in the plants are capable of changing the organic mercury, breaking it down into a less toxic form, known as elemental mercury. Researchers report the technique can be used on any plant. The project has been so successful that a private company, PhytoWork, Inc., has been set up to use the genetically engineered plants to help clean up the environment.

Lead Principal Investigator:

Richard B. Meagher
University of Georgia
(706) 542-5925

More Information on the Web:

<http://www.em.doe.gov/science> or
<http://www.id.doe.gov/emsystems/emsp>

